CLAIMS

What is claimed is:

1. A computer model for describing a performance of a segmented transmission line having a plurality of segments, each segment having a transfer function, comprising:

(a) means for storing at least one characteristic value the transfer function of a respective segment of the segmented transmission line;

(b) means for storing information relating to at least one algorithm, said algorithm being for determining the effect of a respective characteristic value and sequence of transmission line segments on a performance of the overall segmented transmission line; and

(c) means for adjusting a characteristic value,

whereby a set of characteristic values may be defined for respective transmission line segments, having an optimized performance in view of the at least one algorithm.

2. The model according to claim 1, wherein the characteristic value is a length of a respective transmission line segment.

3. The model according to claim 1, wherein the at least one algorithm calculates a transfer function of the segmented transmission line.

4. The model according to claim 1, wherein the adjusting means allows adjustment of all characteristic values, the adjustments being based on a determined performance of the segmented transmission line.

5. The model according to claim 1, wherein the segmented transmission line comprises an air-spaced coaxial transmission line adapted for transmitting an RF signal, the performance comprising signal transmission efficiency.

6. The model according to claim 1, wherein a precision of the algorithm exceeds a manufacturing tolerance of the segmented transmission line.

7. The model according to claim 1, further comprising means for outputting a predicted performance of the segmented transmission line based on the respective characteristic values.

8. The model according to claim 1, wherein the respective characteristic values are substantially non-incrementally distributed across a range.

9. The model according to claim 1, wherein the respective characteristic values are substantially non-monotonically distributed across a range.

10. A method for optimizing the segment characteristics of a segmented transmission line, comprising the steps of modeling the electrical performance of the segmented transmission line, evaluating the model for electrical performance, and selecting a set of segment characteristics, based on the evaluation, which meets a set of predefined optimization criteria.

11. The method according to claim 10, wherein the set of segment characteristics comprises a respective length of each segment.

12. The method according to claim 10, wherein the model is evaluated to determine a transfer function of the segmented transmission line.

13. The method according to claim 10, wherein the segmented transmission line comprises an air-spaced coaxial transmission line adapted for transmitting an RF signal, the predefined optimization criteria comprising signal transmission efficiency.

14. The method according to claim 10, wherein a precision of the evaluation exceeds a manufacturing tolerance of the segmented transmission line.

15. The method according to claim 10, further comprising outputting a predicted performance of the segmented transmission line based on the respective segment characteristics.

16. The method according to claim 10, further comprising the step of producing a set of transmission line segments according to the selected segment characteristics.

17. The method according to claim 10, wherein a variation in respective segment characteristics is distributed substantially non-incrementally.

18. The method according to claim 10, wherein a variation in respective segment characteristics is ~~distributed~~ substantially non-monotonically.

19. A segmented transmission line, produced according to claim 16, wherein the segment characteristic comprises a respective segment length and the optimization criteria comprises a minimization of worst case VSWR over a radio frequency band.

20. A segmented transmission line, produced according to claim 16, wherein the segmented transmission line comprises an air-spaced coaxial transmission line adapted for transmitting an RF signal; the segment characteristic comprises a respective segment length; and the optimization criteria comprises a minimization of worst case VSWR over a radio frequency band.